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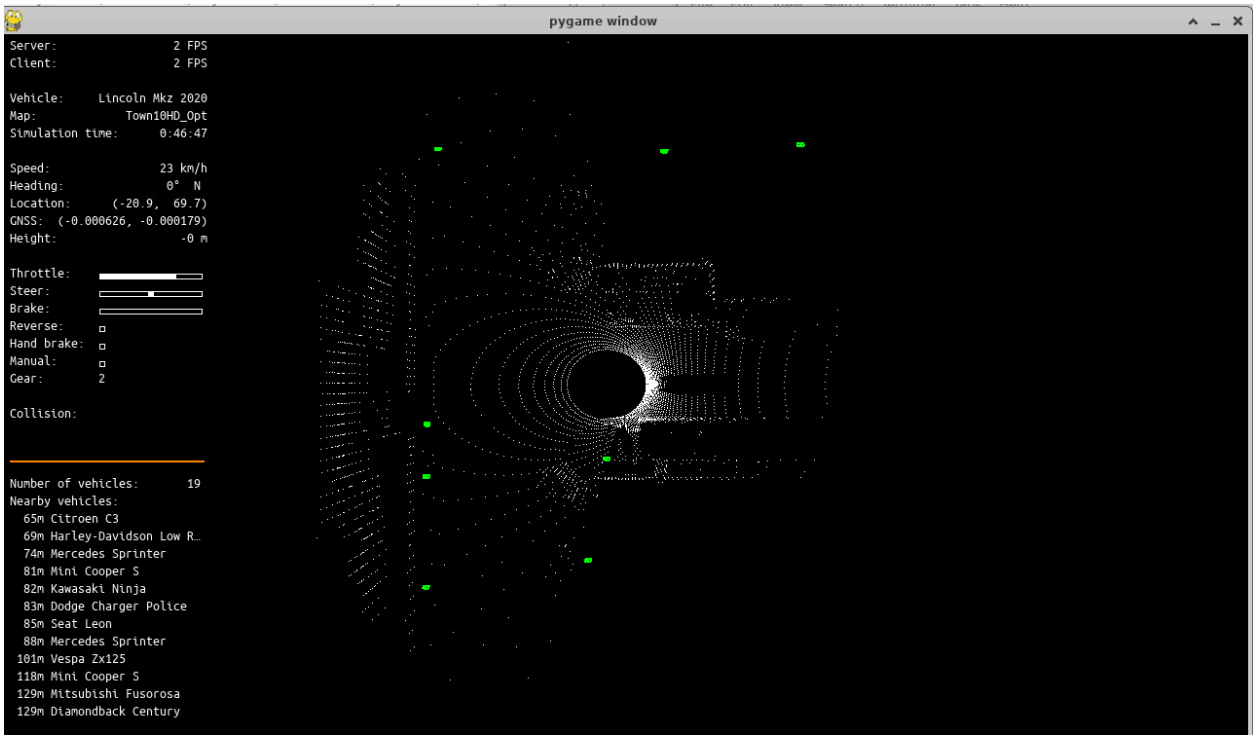
EE 260C

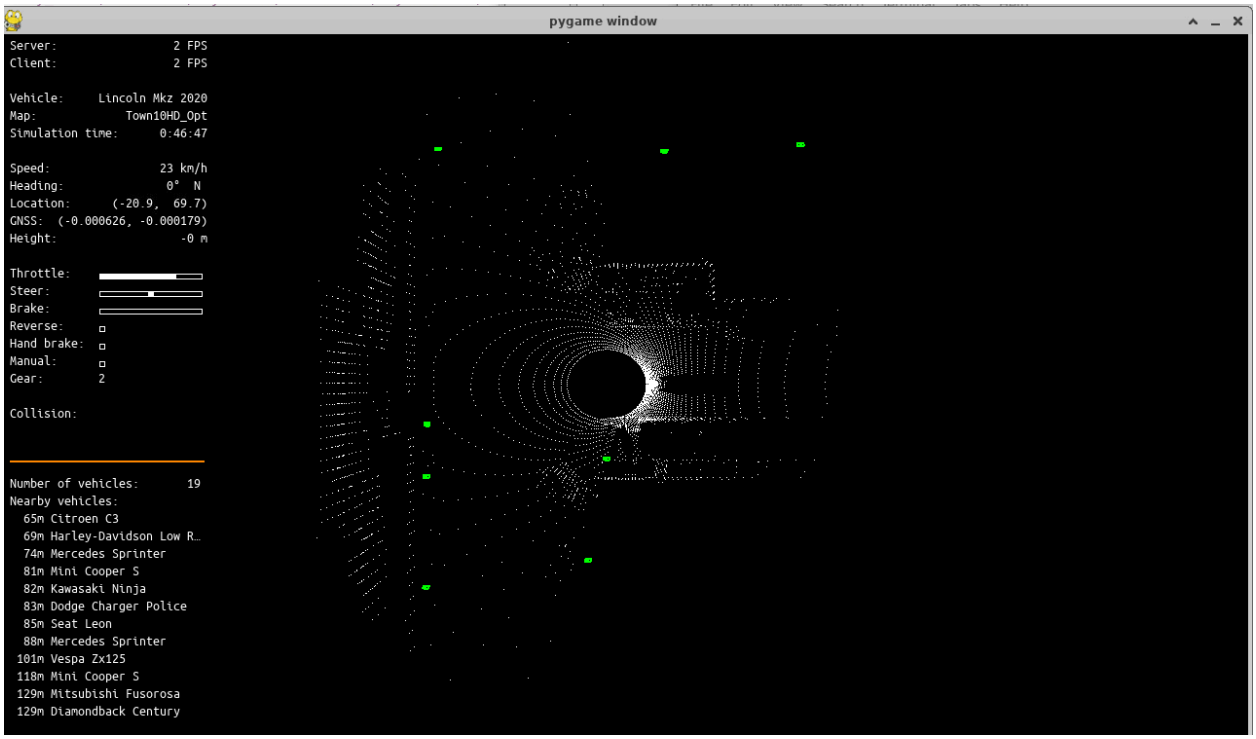
Lab 1 Report

Part 1

Was able to set the environment and run both generate_traffic.py and automatic.py

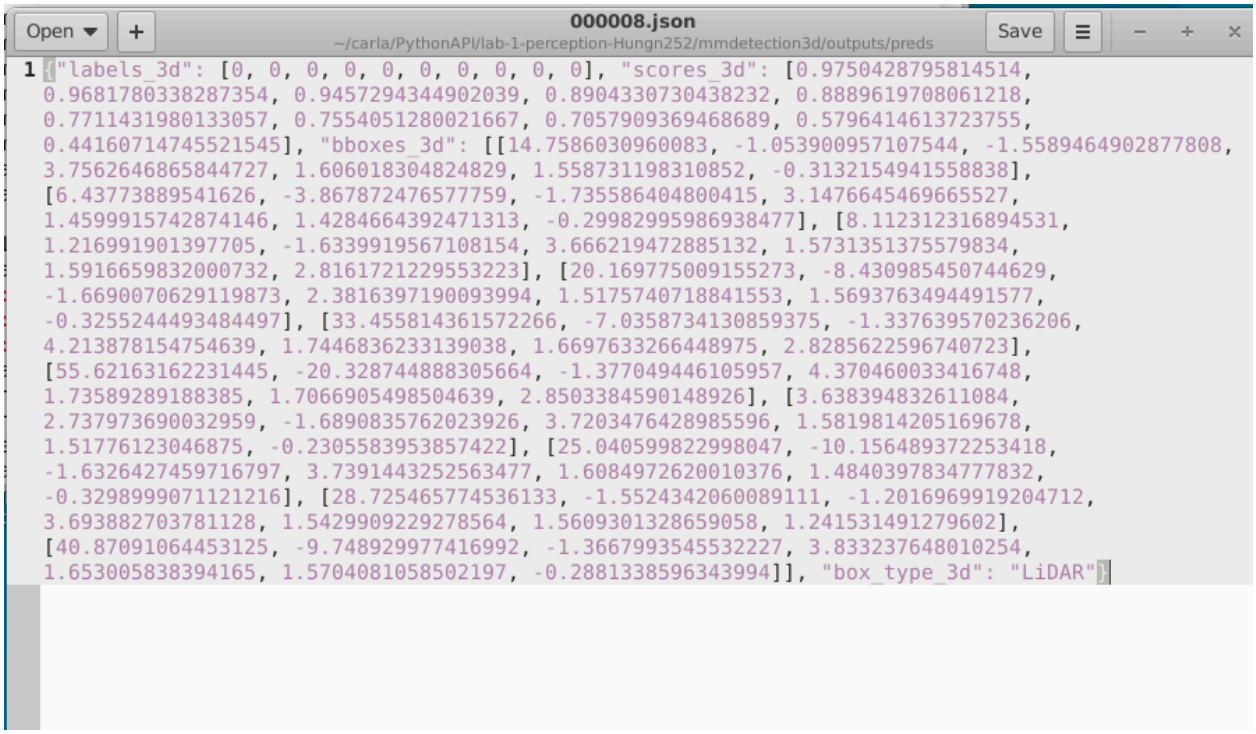


Part 2
I want to use PointPillar so I use LiDar as my primary sensor.

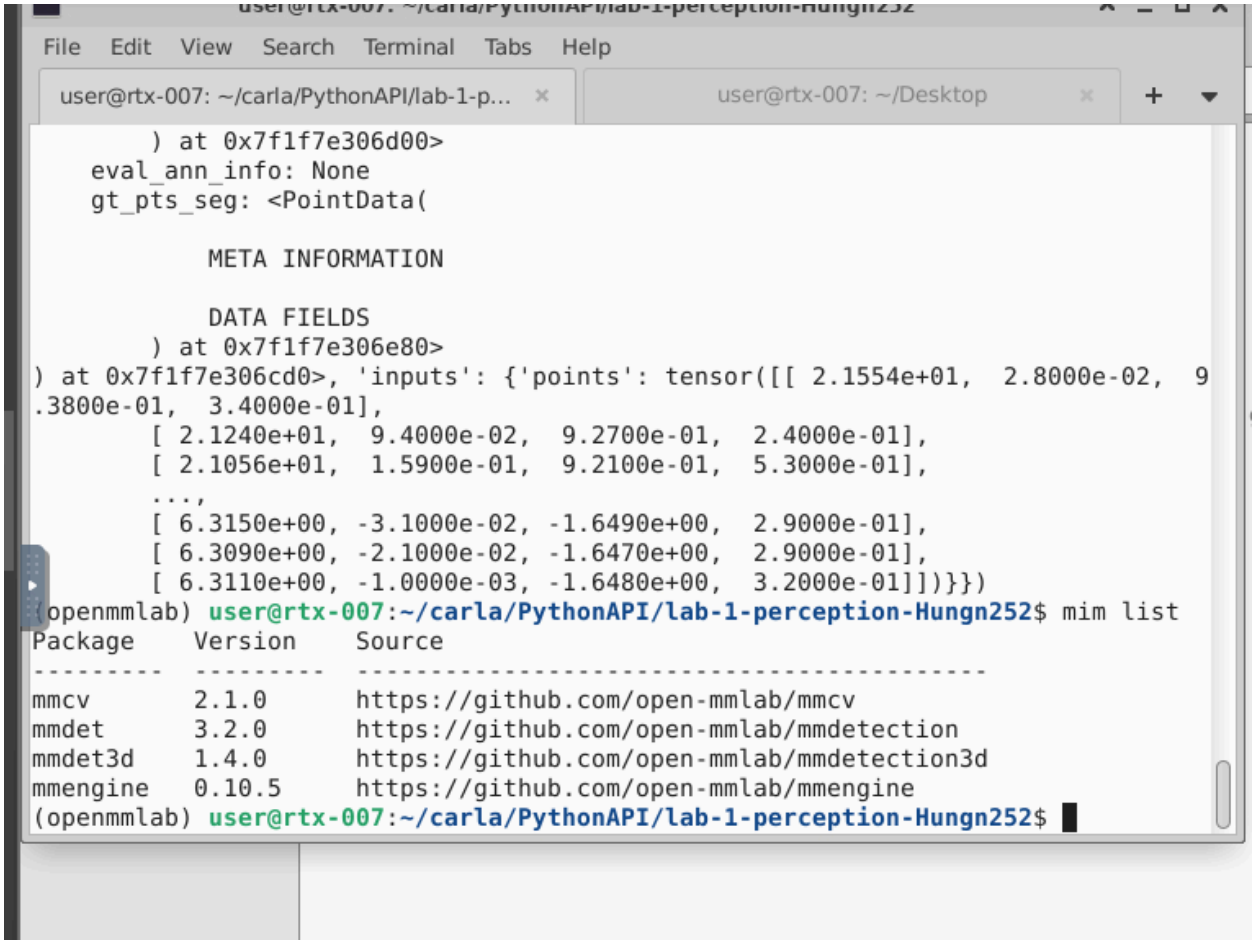


Lidar point BEV with ground truth bounding boxes.

Part 3
For the pre-trained model, I was able to install mmdetection3d and demo-run inference of the Pointpillar model using the Kitti dataset.
I was able to understand the input format of the model which is a bin data format that includes x, y, z, and intensities of each point.
I tried to convert the numby nparray format of the sensor data to .ply and then to .bin but later found out I could feed the lidar sensor_data directly to the inference function.
But then I ran into dependencies issues.
I tried to solve it by reinstalling the environmentand dependencies multiple times and also running pdb trace to track down the bug. Even though I have learned a lot about Python, Carla, and openmimlab environments along the way, I wasn't able to resolve the issue. If I activate openmimlab environment, the model runs fine. But when I ran it in Carla's environment where mmdet3d is installed as a package, I ran into the error below.



The label file generated from Kitti dataset



Package setup

Error Code

Analyze:
This lab was challenging. I learned a lot about how virtual environments and tools needed in simulating self-driving stack work together. The setup part is harder than I thought it would be. The attached files include the results I got from running demo inference in different formats.